

REGINALD ALAN WATSON

ACADEMIC QUALIFICATIONS: B.Sc.(Hon.), M.Sc., Ph.D.

CITIZENSHIP: Australian, Canadian

HEALTH: Excellent

PRESENT POSITION

DESIGNATION: Senior Research Fellow

EMPLOYER: Fisheries Centre
University of British Columbia
Vancouver Canada

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EMPLOYMENT HISTORY 1.

POSITION: SENIOR FISHERIES FELLOW 9/99 to Present
SENIOR RESEARCH SCIENTIST
EMPLOYER: Fisheries Centre, University of British Columbia, Vancouver, Canada

PROJECT: 'Sea Around Us' project

SUPERVISOR: D. Pauly

PROJECT DESCRIPTION: The 'Sea Around Us' project is a major Pew Trust-funded project which examines and reports on the state of marine ecosystems, and the impacts of fishing on these. To support this work a database of world fisheries catch and fishing effort has been developed with procedures for adjusting for unaccounted mortalities including discarding, misreporting etc. The project produces ecological models of major marine systems, conducts energy analysis on fishing fleets, and completes a wide range of analysis on data provided by official sources and by consultants around the world. Impacts and overlap between commercial fisheries and other groups (marine mammals, birds) and critical habitats (seamounts, coral reefs, mangrove etc) are an important part of current work. While the initial phase concentrated on the North Atlantic the work has expanded to include all oceans and seas.

DUTIES: Develop and support major global catch and effort databases, develop GIS databases and tools, provide spatial analysis, develop Fisheries Centre capacity for GIS work, support ecological modelling, supervise project staff and students involved with database work within the Pew-funded 'Sea Around Us' project.

Additionally:

2008-2010: Commonwealth Environmental Research Facilities Research Fellowship (Professor of Marine Ecosystem Modelling, University of Tasmania).

2008-2009: Participant, National Center for Ecological Analysis and Synthesis Working Group: "Finding common ground in marine conservation and management"

2003-2007: Participant, National Center for Ecological Analysis and Synthesis Working Group: "Linking marine biodiversity to ecosystem functions and services"

2003-2005: Member of Marine Fish Subcommittee of COSEWIC (Committee on the Status of Endangered Wildlife in Canada). A committee of experts that assesses and designates which wild species are in some danger of disappearing from Canada

EMPLOYMENT HISTORY 2.

POSITION: PRINCIPAL FISHERIES SCIENTIST (Level7-2) 5/97 to 2/01
SENIOR FISHERIES SCIENTIST (Level6-4) 9/94 to 5/97
EMPLOYER: Western Australian Fisheries Department

PROJECT: Trawl Section (prawns, scallop and bycatch)

SUPERVISOR: N. Caputi

PROJECT
DESCRIPTION:

Commercial prawn fisheries are a major resource in Western Australia contributing to significant employment and foreign exchange. The major fisheries (Shark Bay and Exmouth Gulf) are intensively managed. This management requires close industry liaison, a comprehensive logbook scheme, extensive surveys of spawning and recruiting stocks, stock assessment, risk assessment, and simulation modelling.

DUTIES: Lead trawl section, supervise and coordinate fisheries research on trawl fisheries within the State. Develop fisheries models applicable to management needs. Coordinate research with policy/management and industry representatives. Significant periods heading Invertebrate branch as Supervising Scientist.

Additional Projects:

PROJECT: Ecological Modelling and Stock Assessment

SUPERVISOR: T. Pitcher, C. Walters and D. Pauly

PROJECT
DESCRIPTION: Sept 1 to Feb 1/98

Work while on long service leave at the University of British Columbia's Fisheries Centre developing new ecological modelling methods which investigate the impacts of marine protected areas, spatial closures, and other management changes on whole marine ecosystems.

SUPERVISOR: J. Penn

2/97 – 9/99

Bilateral Commonwealth Department of Industry , Science and Tourism funded collaborative modelling research with Mexico to optimize catch values from commercial shrimp fisheries in Shark Bay and the Gulf of Mexico

EMPLOYMENT HISTORY 3.

POSITION: PRINCIPAL FISHERIES SCIENTIST PO4(3) 8/91 to 9/94
SENIOR FISHERIES BIOLOGIST (I-S9) 4/89 to 8/91

EMPLOYER: Queensland Dept of Primary Industries

PROJECT: Project leader ACIAR "Underwater Visual Census Methods and their Application to Stock Assessment of Reef Fish 8/93 to 9/94

SUPERVISOR: M. Potter

PROJECT DESCRIPTION:

Using underwater visual census methods to assess reef fish stocks in the Solomon Islands, Fiji and Papua New Guinea. Teach UVC methodology and stock assessment techniques to biologists from these countries. Organize and conduct international workshops.

PROJECT: Supervision Trawl Projects 8/89 to 9/94

SUPERVISOR: M. Potter

PROJECT DESCRIPTION:

Major state prawn projects in northern Queensland including Gulf of Carpentaria, Torres Strait and Princess Charlotte Bay. Each study involves study of juveniles; growth, mortality and recruitment processes; fecundity; and historical commercial trends.

EMPLOYMENT HISTORY 4.

OVERSEAS PROJECTS:

8/89-5/90: Cooperative Institute for Marine and Atmospheric Studies (CIMAS), University of Miami, and U.S. National Marine Fisheries Service (NMFS)

Development of methods and collaborative work on commercial fisheries modelling especially examination of optimal seasonal closure strategies. Work presented at ICES Symposium in New Brunswick, Canada and at seminars at the University of Miami, Louisiana State Fisheries, Canadian Department of Fisheries and Oceans and elsewhere.

7/92-7/93: Environmental Management Development in Indonesia (EMDI), Jakarta

Coordination of a national marine biodiversity database (GIS SPANS) with the Indonesian Academy of Sciences (Research and Development Oceanography), the Ministry of Population and Environment, and other government agencies and NGOs. Prepare university lectures and popular/government articles on marine biodiversity and marine conservation strategies.

PROJECT:

Torres Strait Prawn 9/89 to 8/89

SUPERVISOR:

Dr R. Coles

PROJECT DESCRIPTION:

This project was developed to investigate aspects of the shrimp and other fisheries resources of Torres Strait most relevant to management needs. Project includes study of juveniles; growth, mortality and recruitment processes; fecundity; and historical commercial trends.

DUTIES

Plan, develop and supervise Torres Strait project. Manage project staff, research vessel and budget. Liaise with other national and international research, management, industry and government bodies. Formulate research strategy.

EMPLOYMENT HISTORY 5.

PROJECT: Red-spot King Prawn Bycatch 1/86 to 1/88

SUPERVISOR: Dr G. Goeden

PROJECT DESCRIPTION: Project investigated the effects of shrimp trawling on the Great Barrier Reef off Central Queensland, and described spatial and temporal associations in the demersal trawl 'community'.

DUTIES: Assist in project planning and staff supervision. Oversee analysis; interpret and publish findings.

PROJECT: Gulf of Carpentaria Prawns 4/84 to 9/85

SUPERVISOR: Dr G. Goeden

PROJECT DESCRIPTION: This project investigated the biology and life-history of commercial shrimp species in the Gulf of Carpentaria fishery in order to facilitate their management.

DUTIES: Assist staff supervision, data analysis and interpretation.

POSITION: SENIOR FISHERIES BIOLOGIST 8/82 to 4/84

EMPLOYER: Dept of Primary Industry, Fisheries Research and Survey Branch
Government of Papua New Guinea
Box 417, Konedobu, Port Moresby, Papua New Guinea

SUPERVISOR: Dr R. Branford

DUTIES: Duties as tuna biologist: supervise foreign and domestic commercial data base, ensure compliance of foreign operators with national statistics requirements, and liaise with the South Pacific Commission. Direct research into deepwater reef resources (hand-lining) and head trawl fish utilization task. Responsible for computer systems development, supervision of programmer and data entry personnel. Advise other biologists of their computer and statistical needs. Assist Principal biologist in the administration of the research station. Act as publications officer: edit/co-write research and annual reports.

EMPLOYMENT HISTORY 6.

POSITION: BIOLOGIST SYSTEMS SPECIALIST 4/78 to 6/79
(BIOLOGIST ATYPICAL)

EMPLOYER: Lake of the Woods/Rainy Lake Assessment Unit, Fish and
Wildlife, Kenora District, Ministry of Natural Resources of
Ontario
Box 5080, Kenora, Ontario, Canada P9N 3X9

SUPERVISOR: V. Macins

DUTIES: Develop, implement and maintain a fisheries research data information
system (systems analysis, programming, statistics). Assist chief biologist with
design of sampling programs and aid in field collection (fish tagging, netting,
bird banding etc.). Aid other units with computer analysis and data
processing. Train and supervise computer operators and oversee hardware
and software purchases.

POSITION: LECTURER 1/78 to 4/78

EMPLOYER: Dept of Zoology, Brandon University
Brandon, Manitoba, Canada

SUPERVISOR: Dr R. Smith

DUTIES: Develop, teach and examine an introductory zoology course for teachers in
training at the remote Indian Reservation of Nelson House, Manitoba;
arrange transportation and shipping materials.

POSITION: TECHNICIAN (3) 4/77 to 4/78

EMPLOYER: Freshwater Institute, Fisheries and Oceans Canada
501 University Crescent, Winnipeg, Manitoba, Canada

SUPERVISOR: I. Davies

DUTIES: Assist in the development of a computer model of dipteran biomass with
primary productivity and test this model with field data. Obtain biomass
measures using electrostatic mass balance. Supervise and train technician.

EMPLOYMENT HISTORY 7.

POSITION: RESOURCE TECHNICIAN (2) 8/77 to 9/77

EMPLOYER: Lakehead Conservation Authority
Oliver Road, Thunder Bay North, Ontario, Canada

SUPERVISOR: R. Hamilton

DUTIES: Assess Neebing River for rainbow trout spawning and nursery capabilities as baseline for proposed river canalization. Population census with electrofishing. Mapping and report preparation.

POSITION: COMPUTER DATA ANALYST; FIELD SUPERVISOR;
TEACHING ASSISTANT; GRADUATE STUDENT 4/75 to 9/77

EMPLOYER: Dept of Zoology, University of Manitoba
Winnipeg, Manitoba, Canada R3T 2N2

SUPERVISOR: Dr T.A. Dick

DUTIES: Develop and run practical demonstrations for zoology courses, supervise fish survey team, work as parasitology technician at remote research station, collect fisheries data, analyze data on mainframe systems (IBM 360/70) using packaged and programming languages (Fortran, VSAPL, SPSS etc.).

POSITION: TECHNICIAN 1 5-9/72 to 74 (Summers)

EMPLOYER: Freshwater Institute, Fisheries and Oceans Canada
501 University Crescent, Winnipeg, Manitoba, Canada

PROJECT: Benthic Studies (Experimental Lakes)

SUPERVISOR: I. Davies

DUTIES: Design, construction and maintenance of benthic sampling equipment and schedules. Invertebrate identification and supervision of technicians. Work with fish, chemical and primary productivity projects.

PROJECT: Fish Studies (Heming Lake)

SUPERVISOR: J. Martin / J. Whitaker

DUTIES: Maintain fish survey schedule (gill, fyke, seining, and trawling) and collect biological data on fish. Feed and treat rainbow trout fingerlings until release. Work with chemical, limnological and aquaculture programs.

PUBLICATIONS

REFEREED PAPERS

- T. Allnutt, T. McClanahan, M. Baker, E. Lagabrielle, C. McClennen, A. Rakotomanjaka, T. Tianarisoa, R. Watson, C. Kremen. Comparison of Marine Spatial Planning Methods in Madagascar Demonstrates Value of Alternative Approaches. *PloS One* (In press)
- Sumaila, U.R., Cisneros-Montemayor, A., Dyck, A., Huang, L., Cheung, W., Jacquet, J., Kleisner, K., Lam, V., McCrea-Strub, A. Swartz, W., **Watson, R.**, Zeller, Z., Pauly, D. Impact of the Deepwater Horizon well blowout on the Economics of U.S. Gulf fisheries. *Canadian J Fisheries and Aquatic Sciences* (in press)
- Coll, M., Piroddi, C., Albouy, C., Ben Rais Lasram, F., Cheung, W. W. L., Christensen, V., Karpouzi, V. S., Guilhaumon, F., Mouillot, D., Paleczny, M., Palomares, M.L., Steenbeek, J., Trujillo, P., **Watson, R.**, and Pauly, D. The Mediterranean Sea under siege: spatial overlap between marine biodiversity, cumulative threats and marine reserves *Global Ecology and Biogeography* (in press – early view on-line)
- Srinivasana, U.T., **Watson, R.**, Sumaila, U.R. 2012. Global fisheries losses at the exclusive economic zone level, 1950 to present. *Marine Policy* 36: 544-549.
- Tremblay-Boyer, L., Gascuel, D., **Watson, R.**, Christensen, V., Pauly, D. 2011. Effects of industrial fisheries on the biomass of the world's oceans: 1950-2006 *Marine Ecology Progress Series* 442: 169-185.
- Norse, E.A., Brooke, S., Cheung, W.W.L., Clark, M.R., Ekeland, I., Froese, R., Gjerde, K.M., Haedrich, R.L., Heppell, S.S., T., M., Morgan, L.E., Pauly, D., Sumaila, R. and **Watson, R.** 2011. Sustainability of deep-sea fisheries. *Marine Policy*. 36: 307-320.
- Andersen, S.C., Flemming, J.M., **Watson, R.** and Lotze, H.K. 2011. Serial exploitation of global sea cucumber fisheries. *Fish and Fisheries* 12: 317-339.
- Lam, V.W.Y., Sumaila, U.R., Dyck, A., Pauly, D. and **Watson R.** 2011. Construction and first applications of a global cost of fishing database. *ICES Journal of Marine Science* ICES 68: 1-9.
- Collette, B.B., Carpenter, K.E., Polidoro, B.A., Juan-Jordá, M.J., Boustany, A., Die, D.J., Elfes, C., Fox, W., Graves, J., Harrison, L., McManus, R., Minte-Vera, C.V., Nelson, R., Restrepo, V., Schratwieser, J., Sun, C., Amorim, A., Peres, M.B., Canales, C., Cardenas, G., Chang, S. Chiang, W., Leite, N., Harwell, H., Lessa, R., Fredou, F.L., Oxenford, H.A., Serra, R., Shao, K., Sumaila, R., Wang, S., **Watson, R.**, Yáñez, E. 2011. High value and long-life: double jeopardy for tunas and billfishes. *Science* 333: 291-292.
- Scrub-McCrea, A., Zeller, D., Sumaila, U.R., Swartz, W., Kleisner, K., **Watson, R.**, and Pauly, D. 2011. Potential impact of the Deepwater Horizon oil spill on commercial fisheries in the Gulf of Mexico. *Fisheries* 36(7):332-336.

PUBLICATIONS

REFEREED PAPERS

- Mouillot D., Albouy C., Guilhaumon F., Ben Rais Lasram F., Coll M., DeVicтор V., Douzery E., Meynard C., Pauly D., Tomasini J. A., Troussellier M., Velez L., **Watson R.**, and Mouquet N. 2011. Protected and threatened components of fish biodiversity in the Mediterranean Sea. *Current Biology* 21(12): 1044-1050
- Andersen, S.C., Flemming, J.M., **Watson, R.** and Lotze, H.K. 2011. Global Expansion of Invertebrate fisheries: trends, drivers, and ecosystem effects. *PLoS ONE* 6(3): e14735.
- Anticamara, J., **Watson, R.**, Gelchu, A., Beblow, J., Pauly, D. 2011. Global fishing effort (1950-2010): Trends, gaps, and implications. *Fisheries Research* 107: 131–136
- Swartz, W., Sala, E, Tracey, S., **Watson, R.**, Pauly, D. 2010. The spatial expansion and ecological footprint of fisheries (1950 to present). *PLoS ONE* 5(12) e15143
- Branch, T, **Watson, R.**, Fulton, E.A., Jennings, S., McGilliard, C.R., Pablico, G., Ricard, D., Tracey, S.R. 2010. The trophic fingerprint of marine fisheries. *Nature* 468: 431-435.
- Hunsicker, M.E., Essington, T.E., **Watson, R.** and Sumaila, U.R. 2010. The value of cephalopods to global marine fisheries. *Fish and Fisheries* 11: 421-438.
- Swartz, W., Sumaila, U.R., **Watson, R.** and Pauly, D. 2010. Changes in the supply of seafood to three markets: the EU, Japan and the USA. *Marine Policy*. 34(6):1366-1373.
- Sethi, S.A., Branch, T.A. and **Watson, R.** 2010. Global fishery development patterns are driven by profit and not by trophic level. *Proc. National Acad. Science*. 107(27): 12163-12167
- Srinivasana, U.T., Cheung, W.L., **Watson, R.** and Sumaila, U.R. 2010. Food security implications of global marine catch losses due to overfishing. *Journal of Bioeconomics* 12:183–200.
- Sumaila, U.R, Khan, A.S., Dyck, A.J., **Watson, R.A.**, Munro, G., Tyedmers, P., and Pauly, D. 2010. A bottom-up re-estimation of global fisheries subsidies. *Journal of Bioeconomics* 12: 201-225.
- Sumaila, U.R., Khan, A., Teh, L., **Watson, R.**, Tyedmers, P., and Pauly, D. 2010. Subsidies to high seas bottom trawl fleets and the sustainability of deep-sea demersal fish stocks. *Marine Policy* 34: 495–497.
- Brown, C.J, Fulton, E.A., Hobday, A.J., Matear, R., Possingham, H., Bulman, C., Christensen, V., Forrest, R., Gehrke, P., Gribble, N., Griffiths, S., Lozano-Montes, S.H., Martin, J., Metcalf, S., Okey, T., **Watson, R.** and Richardson, A.J. 2010. Ecological interactions will determine winners and losers under climate change in marine ecosystems and fisheries. *Global Change Biology* 16(4): 1194-1212.

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REFEREED PAPERS

- Cheung, W.W.L, Lam, V.W.Y., Sarmiento, J.L., Kearney, K., **Watson, R.**, Zeller, D., and Pauly, D. 2010. Large-scale distribution of maximum catch potential in the global ocean under climate change. *Global Change Biology* 16(1): 24-35.
- Chassot, E., Bonhommeau, S., Dulvy, N.K., Mélin, F., **Watson, R.**, Gascuel, D., Le Pape, O. 2010. Global marine primary production constrains fisheries catches. *Ecological Letters* 13(4): 495-505.
- Butchart, S.H.M., Walpole, W., Collen, B., van Strien, A. Almond, R.E.A., Baillie, J.E.M., Bomhard, B., Brown, C., Bruno, J., Carr, G.M., Chenery, A., Csirke, J., Davidson, N.C., Foster, M., Galli, A., Galloway, J.N., Genovesi, P., Gregory, R., Hockings, M., Kapos, V., Lamarque, J., Leverington, F., Loh, J., McGeoch, M.A., McRae, L., Minasyan, A., Morcillo, M.H., Oldfield, T., Pauly, D., Quader, S., Revenga, C., Sauer, J., Scharlemann, J.P.W., Skolnik, B., Spear, D., Stanwell-Smith, D., Symes, A., Tierney, M., Tyrrell, T.R., Vié, J. and **Watson, R.** 2010. Global biodiversity: indicators of recent declines. *Science* May 101126/science1187512.
- Pitcher, T.J., Clark, M.R., Morato, T. and **Watson, R.** 2010 Seamount fisheries: do they have a future? In *Mountains in the Sea*, Eds Staudigel, H., Koppers, A., Lavelle, B., Pitcher, T. and Shank, T. *Oceanography* 23(1): 135-144
- Alder, J., Cullis-Suzuki, S., Karpouzi, V., Kaschner, K., Trujillo, P., Swartz, W., **Watson, R.** and Pauly, D. 2010. Aggregate performance in managing marine ecosystems of 53 maritime countries. *Marine Policy* 34:468-476.
- Worm, B., Hilborn, R., Baum, J.K., Branch, T.A., Collie, J.S., Costello, C., Fogarty, M.J., Fulton, E.A., Hutchings, J.A., Jennings, S., Jensen, O.P., Lotze, H.J., Mace, P.M., McClanahan, T.A., Minto, C., Palumbi, S.R., Parma, A.M., Ricard, D., Rosenberg, A.A. **Watson, R.**, Zeller, D. 2009. Rebuilding global fisheries. *Science* July 31 325: 578-585. (Ecological Society of America 2011 Sustainability Science Award)
- Mora, C., Myers, R.A., Pitcher, T.J., De Young, C., Sumaila, R., Zeller, D., **Watson, R.**, Gaston, F.J. and Worm, B. 2009. Management of the world's marine fisheries. *PLoS Biol* 7(6): e1000131. doi:10.1371/journal.pbio.1000131.
- Agnew, D.J., Pearce, J., Pramod, G., Peatman, J., **Watson, R.**, Beddington, J.R. and Pitcher, T.J. 2009. Estimating the worldwide extent of illegal fishing. *PLoS ONE* 4(2 e4570):1-3.
- Christensen, V., Walters, C.J., Ahrens, R., Alder, J., Buszowski, J., Christensen, L.B., Cheung, W.W.L., Dunne, J., Froese, R., Karpouzi, V., Kastner, K., Kearney, K., Lai, S., Lam, V., Palomares, M.L.D., Peters-Mason, A., Piroddi, C., Sarmiento, J.L., Steenbeek, J., Sumaila, R., **Watson, R.**, Zeller, D. and Pauly, D., 2009. Database-driven models of the world's large marine ecosystems. *Ecological Modelling* 220: 1984-1996.

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REFEREED PAPERS

- Cheung, W.L.W., Close, C., Lam, V.W.Y., Sarmiento, J., Kearney, K., **Watson, R.** and Pauly, D. 2009. Projections of global marine biodiversity impacts under climate change scenarios. *Fish and Fisheries* 10(1): 1-17
- Halpern, B.S., Kappel, C.V., Micheli, F., Selkoe, K.A., D'Agrosa, C., Bruno, J., Casey, K., Ebert, C., Fox, H.E., Fujita, R., Heinemann, D., Lenihan, H.S., Madin, E.M.P., Perry, M., Selig, E., Spalding, M., Steneck, R., Walbridge, S., **Watson, R.** 2008. Southern ocean not so pristine and diminishing sea life. (Commentary Letters) *Science* 321: 1443-1444.
- Selkoe, K.A., Kappel, C.V., Halpern, B.S., Micheli, F., D'Agrosa, C., Bruno, J., Casey, K., Ebert, C., Fox, H.E., Fujita, R., Heinemann, D., Lenihan, H.S., Madin, E.M.P., Perry, M., Selig, E., Spalding, M., Steneck, R., Walbridge, S., **Watson, R.** 2008. Response to Comment on "A Global Map of Human Impact". (Technical Comment) *Science* 321: 1446c
- Cheung, W.W.L., Close, C., Lam, V., **Watson, R.** and Pauly, D. 2008. Application of Macroecological theory to predict effects of climate change on global fisheries potential. *Marine Ecology Progress Series* 165:187-197.
- Sumaila, U.R., Teh, L., **Watson, R.**, Tyedmers, P. and Pauly, D. 2008 Fuel Price Increase, Subsidies, Overcapacity and Resource Sustainability. *ICES Journal of Marine Science* 65, doi: 10.1093/icesjms/fsn070
- Halpern, B.S., Walbridge, S., Selkoe, K.A., Kappel, C.V., Micheli, F., D'Agrosa, C., Bruno, J., Casey, K., Ebert, C., Fox, H.E., Fujita, R., Heinemann, D., Lenihan, H.S., Madin, E.M.P., Perry, M., Selig, E., Spalding, M., Steneck, R., **Watson, R.** 2008. A global map of human impact on marine ecosystems. *Science* 319: 948-952.
- Srinivasan, U.T., Carey, S.P., Hallstein, E., Higgins, P.A.T., Kerr, A.C., Koteen, L.E., Smith, A.B., **Watson, R.**, Harte, J. and Norgaard, R.B. 2008. The debt of nations and the distribution of ecological impacts from human activities. *Proc. National Acad. Science* 105: 1768-1773
- Sumaila, U.R., Khan, A., **Watson, R.**, Munro, G., Zeller, D., Baron, N. and Pauly, D. 2007 The World Trade Organization and global fisheries sustainability. *Fisheries Research* 88:1-4.
- Sumaila, U.R., Zeller, D., **Watson, R.**, Alder, J. and Pauly, D. 2007. Potential costs and benefits of marine reserves in the high seas. *Marine Ecology Progress Series* 345: 305-310.
- Karpouzi, V.S., **Watson, R.**, and Pauly D. 2007. Modelling and mapping resource overlap between seabirds and fisheries on a global scale: a preliminary assessment. *Marine Ecology Progress Series* 343: 87-99.

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- Sumaila, U.R., Marsden, A.D., **Watson, R.** and Pauly, D. 2007. Global Ex-vessel Fish Price Database: Construction and Applications. *Journal of Bioeconomics* 9: 39-51.
- Murawski, S., Methot, R., Tromble, G., Hilborn, R.W., Briggs, J.C., Worm, B., Barbier, E.B., Beaumont, N., Duffy, J.E., Folke, C., Halpern, B.S., Jackson, J.B.C., Lotze, H.K., Micheli, F., Palumbi, S.R., Sala, E., Selkoe, K.A., Stachowicz, J.J. and **Watson, R.** 2007. Biodiversity Loss in the Ocean: How Bad Is It? *Science* 316: 1281-1285.
- Cheung, W.W. L., **Watson R.**, Morato, T., Pitcher, T.J. and Pauly, D. 2007. Intrinsic vulnerability in the global fish catch. *Marine Ecology Progress Series* 333: 1-12.
- Worm, B., Barbier, E.B., Beaumont, N., Duffy, J.E., Folke, C., Halpern, B.S., Jackson, J.B.C., Lotze, H., Micheli, F., Palumbi, S.R., Sala, E., Selkoe, K.A., Stachowicz, J.J., and **Watson, R.** 2006. Impacts of biodiversity loss on ocean ecosystem services. *Science* 314: 787-790.
- Kaschner, K., **Watson, R.**, Trites, A.W., Pauly, D. 2006. Mapping worldwide distributions of marine mammals using a Relative Environmental Suitability (RES) model. *Marine Ecology Progress Series* 316: 285-310.
- Watson, R.**, Revenga, C. and Kura, Y. 2006. Fishing gear associated with global marine catches: I Database development. *Fisheries Research* 79: 97-102
- Watson, R.**, Revenga, C. and Kura, Y. 2006. Fishing gear associated with global marine catches: II Trends in trawling and dredging. *Fisheries Research* 79: 103-111
- Morato, T., **Watson, R.**, Pitcher, T. and Pauly, D. 2006. Fishing down the deep. *Fish and Fisheries* 7(1): 24-34.
- Cheung, W., Alder, J., Karpouzi, V., **Watson, R.**, Lam, V., Day, C., Kaschner, K. and Pauly, D. 2005. Patterns of species richness in the high seas. Secretariat of the Convention on Biological Diversity, Montreal, Technical Series no. 20, 31 pages.
- Tyedmers, P., **Watson, R.**, and Pauly, D. 2005. Fuelling global fishing fleets. *Ambio: a Journal of the Human Environment* 34(8): 635-638.
- Pauly, D., **Watson, R.** and Alder, J. 2005. Global trends in world fisheries: impacts on marine ecosystems and food security. *Philosophical Transactions of The Royal Society: Biological Sciences* 360: 5-12.

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- Watson, R.** 2005. Mapping fisheries catches and related indices of West Africa: 1950 to 2000. [Cartographie des prises halieutiques d'Afrique occidentale : 1950 à 2000 In Pêcheries maritimes, écosystèmes & sociétés en Afrique de l'Ouest : Un demi-siècle de changement, Dakar (Sénégal), 24-28 juin 2002. Actes du symposium international, France. pp. 131-138.
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REPORTS 6.

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- Pitcher, T.J., Watson R., Courtney, A. and Pauly, D. 1998. Assessment of Hong Kong's Inshore Fishery Resources. Fisheries Centre Research Reports, Univ. British Columbia, Vancouver 6(1): 211pp.
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REPORTS 7.

- Watson, R.A. and Keating, J.A. 1990. Velvet prawns (*Metapenaeopsis spp*) of Torres Strait. In Torres Strait prawn project: a review of research 1986-1988. (Ed. J.E. Mellors). Qld Dept Primary Industries Information Series, Qld Dept of Primary Industries, Brisbane, Australia, QI90018. p73-82.
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- Watson, R.A. 1986. The prawn fishery. In Synopsis of the Major Torres Strait Fisheries. (Ed. M.J. Storrs). Comm. Dept. Primary Industry, Fish. Tech. Paper No. 87-1. pp35-47. (Major contributor to this section)
- Watson, R.A. 1984. Changes in the average weight and catch per unit effort of tunas from Papua New Guinea waters. Papua New Guinea Dept. Primary Industry, Fisheries Research and Surveys Branch, Port Moresby No. 84-03. 35pp.
- Watson, R.A. 1984. Trawl fish composition and harvest estimates for the Gulf of Papua. Papua New Guinea Dept. Primary Industry, Fisheries Research and Surveys Branch, Port Moresby No. 84-01. 25pp.
- Fisheries Research Annual Report, 1983, Papua New Guinea, Dept. of Primary Industry, Port Moresby, Mar. 1984. (Eds R.A. Watson and J. Lock). 77pp.
- Anon. A prediversion analysis of the spawning and nursery potential and population of rainbow trout, *Salmo gaidneri*, of the Neebing River, Thunder Bay, Ontario. Ontario Ministry of Natural Resources, 1977. (Involved with data collection, analysis and initial report preparation)

PUBLICATIONS

EXTENSION ARTICLES

New Perspectives of the Coastal Biodiversity Management Program. [Perspektif Baru dalam Program Pengelolaan Keanekaragaman Hayati Sumberdaya Lautan dan Pesisir] Serasi (Warta KLH).

Commercial Prawn Catches in Torres Strait. Aust. Fish. Jan. 88, pp23-26.

Torres Strait Prawn Tagging a Success. North. Prawn Fish. Inform. Notes #11, Oct. 87, p8.

Early Results from Prawn Tags. Qld Fisherman Jul. 87, p24.

Prawn Tagging in Torres Strait. Aust. Fish. Mar. 87, p10.

Torres Strait Prawn Tagging. Qld Fisherman Mar. 87, p8.

DPI Studying Torres St Prawns. Qld Fisherman Apr. 86, p33.

New Prawn Research in Torres Strait. Aust. Fish. Jan. 86, pp5-6.

SCIENTIFIC CONFERENCES 1.

2nd International Marine Conservation Congress. Global changes in body size, distribution and productivity of marine fishes under climate change: implications for conservation. Cheung, W.W.L., Dunne, J., Lam, V.W.Y., Sarmiento, J.L., Watson, R., Zeller, D., Pauly, D. 14-18 May 2011, Victoria, Canada

2nd International Marine Conservation Congress. Are global marine fisheries starving seabirds? Paleczny, M., Furness, R.W., Hammill, E., Karpouzi, V., LeCorre, M., Trites, A.W., Watson, R., Pauly, D. 14-18 May 2011, Victoria, Canada

2nd International Marine Conservation Congress. Spatial overlap between marine biodiversity, cumulative threats and marine reserves in the Mediterranean Sea. Coll, M., Piroddi, C., Christensen, V., Karpouzi, V., Paleczny, M., Palomares, M.L., Steenbeek, J., Trujillo, P., Watson, R., Pauly, D., Abouy, C., Guilhaumon, F., Mouillot, D., Lasram, F.B.R., Nicolle, C., Cheung, W.W.L. 14-18 May 2011, Victoria, Canada

AAAS 2011. "Making Fishing Effort in the World Ocean Sustainable: Lessons from Historic Trends." In: "2050: Will There Be Fish in the Ocean?" Symposium Feb 19, 2011. Washington DC (with press briefing – appears on ABC Radio Science Show Feb 26, 2011)

Conference: World Seabird Conference (September 7-11, 2010, Victoria Canada) Are global marine fisheries starving seabirds? Michelle Paleczny, Vasiliki Karpouzi, Patrick O'Hara, Reg Watson, Daniel Pauly

International Conference on Biodiversity Data Management, Bedford Institute, Nova Scotia, Canada. October 2-4, 2007. 'AquaMaps'; Kaschner, K., J. S. Ready, E. Agbayani, J. Rius, K. Kesner-Reyes, P. D. Eastwood, A. B. South, S. O. Kullander, T. Rees, C. H. Close, R. Watson, D. Pauly, and R. Froese.

PICES-ICES. The effect of climate on basin-scale processes and ecosystems. 2007. World fish catch driven by primary production. E Chassot, S Bonhommeau, F Mélin, O Le Pape, R Watson and D Gascuel

Australian Society for Fish Biology, 2006, Hobart, Australia. Global Fisheries: the Big Picture. Reg Watson, Adrian Kitchingman.

American Fisheries Society, 2006, Lake Placid, NY. The direct and indirect contribution of cephalopods to marine fisheries. Mary Hunsicker, Timothy Essington, Reg Watson and Rashid Sumaila

3rd FishBase Mini Symposium – Fish and More, 2005, Thessaloniki, Greece. 'Fish and more: A global seabird-base is underway' (Vasiliki S. Karpouzi, Reg Watson, Daniel Pauly)

SCIENTIFIC CONFERENCES 2.

International Conference on Marine Biodiversity Data Management, Hamburg, Germany, 29 Nov – 1 Dec, 2004. Fisheries impact on global marine biodiversity and ecosystems: inference from large heterogeneous data sets. D. Pauly and R. Watson and Poster Mapping world-wide distributions of marine mammal species using a relative environmental suitability (RES) model. K. Kaschner, R. Watson, A.W. Trites and D. Pauly.

Fisheries Ecosystem Symposium (ASFB 2004), 20th September 2004, Adelaide, Australia. Invited presentation ‘Mapping global fisheries indicators and potential conflicts’ (jointly written with Kristin Kaschner)

Marine Fish Conservation Network, Annual meeting, June 2, 2004, Washington DC. Invited presentation ‘The future for global fisheries: several scenarios for action’.

‘Place matters – geospatial tools for marine science, conservation and management’ 2004 AAAS meeting, February 10-13, 2004, Seattle. Invited to co-present with Jackie Alder ‘Probing the depths: reverse engineering fisheries landings statistics’ (jointly written with Villy Christensen and Daniel Pauly).

The World Summit on Salmon, June 10-13, 2003, Vancouver, B.C. Canada. Invited presentation ‘Status of global fisheries’.

2nd International Symposium on GIS/Spatial Analysis in Fishery and Aquatic Sciences. Brighton, U.K. 2-6 September, 2002. Presented ‘Spatial allocation of global fisheries landings using rule-based procedures’.

World Congress on Aquatic Protected Areas 2002. Cairns, Australia, 14-17 June 2002. Presented ‘Multi-scale decision support for aquatic protected area placement’.

Marine fisheries, ecosystems, and societies in West Africa: a half century of change. Dakar, Senegal, June 26-28 2002. Presented ‘Mapping fisheries catches and related indices of West Africa: 1950 to the present’.

Modelling and mapping trophic overlap between marine mammals and commercial fisheries in the North Atlantic: Implications for fisheries management. Society of Marine Mammalogy Biennial Conf., Nov 28, 2001, Vancouver, Canada (with Kristin Kaschner)

A spatially explicit model of marine mammal food consumption in the North Atlantic – incorporation of habitat preferences using GIS (Abstract). 2nd Workshop on the Use of Geomatic Technologies for Marine Mammal Scientists - Society of Marine Mammalogy Biennial Conf., Nov 29 – Dec 3, 2001, Vancouver, Canada (with Kristin Kaschner)

17th Lowell Wakefield Fisheries Symposium on Spatial Processes and Management of Marine Populations, 27-30 October, 1999, Anchorage, Alaska.

SCIENTIFIC CONFERENCES 3.

Essential Fish Habitat and Marine Reserves, William R. & Lenore Mote International Symposium in Fisheries Ecology, Sarasota, Florida, November 1998. 'Marine Reserves and the restoration of fisheries and marine ecosystems in the South China Sea'.

Second World Fisheries Congress, Brisbane July, 1996. Presented 'Computer simulation of fisheries closures'.

WORKSHOPS AND SEMINARS

‘Exploring productivity changes on fisheries and ecosystems in Tasmanian waters’, Institute of Marine and Antarctic Sciences, Sustainable Marine Research Collaboration Overview, May, 2nd 2011, Hobart

‘Climate change: projecting impacts to fisheries globally and in Tasmanian waters’, Australian Society for Fish Biology, Melbourne, July13, 2010.

‘Ecosystems model analysis to address fisheries management issues and the implications of climate change’ Cross Cutting Tools that assist Environmental Policy Session. Commonwealth Environmental Research Facilities Fellowship Presentations, Canberra, May 25, 2010

‘Integrating climate and ecosystem models’ Univ. Tasmania, Hobart, September 2-4, 2008

‘Global fisheries: the big picture’ Universidad Nacional Autonoma de Mexico Instituto de Ciencias del Mar y Limnologia August 22, 2007

‘The marine human footprint: mapping our impact on the world’s oceans’ presented at the Pristine Oceans working group hosted by the National Center for Ecological Analysis and Synthesis. Caterina D’Agrosa, Eric Sanderson and Reg Watson May 7-11 2004, Santa Barbara, U.S.A. Presented by C. D’Agrosa

‘Linking Marine Biodiversity to ecosystem functions and services’ a workshop hosted by the National Center for Ecological Analysis and Synthesis. May 7-11 2004, Santa Barbara, U.S.A. Invited to present ‘Mapping the decline’.

Marine Fishes Scientific Subcommittee Meeting of the Committee on the Status of Endangered Wildlife in Canada (10-13 September 2004, Winnipeg) invited to present ‘Mapping the decline’.

Modelling Antarctic Ecosystems, UBC Fisheries Centre, April 15-17, 2003. Presented “Mapping global landings: big plans – small boxes”

FAO workshop on the Use of Ecosystem Models to Investigate Multispecies Management Strategies for Capture Fisheries. 17-20 July 2002. UBC FC and FAO.

Advisory Committee on Fisheries Research, Working Party on Status and Trends of Fisheries, Rome, Italy, 30 November – 3 December, 1999.

Ecopath with Ecosim Workshop, 22-25 November 1999, UBC, Vancouver

Marine Biodiversity Management Workshop, 19th June, 1993, Ancol, Jakarta, Indonesia. Presented completion of national strategy. Project EMDI

SCHOLARSHIPS and FELLOWSHIPS

Commonwealth Environmental Research Facilities Research Fellowship (Professor of Marine Ecosystem Modelling, University of Tasmania) 2008-2010.

Canadian National Research Council Postdoctoral Fellowship: Apr 1984 (declined).

University of Queensland Postgraduate Research Scholarship: Jul 1979 -Jul 1982.

Manitoba Fellowship: Sept 1975 - May 1977, May 1977 - Sept 1977.

Canadian National Research Council Scholarship: May 1976 - May 1977, May 1977 (declined).

CURRENT SOCIETY MEMBERSHIPS

Australian Society for Fish Biology (since 1979)

Network of Tropical Fisheries Scientists (since 1983)

Asian Fisheries Society (since 1988)

American Fisheries Society (1990 - 2005)

OTHER QUALIFICATIONS

Tasmanian Drivers License

NAUI SCUBA Divers Certificate

Restricted Radio Operators License

St. John's Ambulance Senior First Aid

HOBBIES & OTHER INTERESTS

Bush walking, tin whistle and Celtic music